

Remarks

The Office Action dated December 3, 2003 has been carefully reviewed and the foregoing amendment has been made in consequence thereof.

Subsequent to entry of this amendment, Claims 1-3, 6-13, and 15-21 are pending in this application. Claims 1-4 and 6-21 stand rejected.. Claims 4, 5, and 14 have been cancelled.

The rejection of Claims 1-4, 6-9, and 11-20 under 35 U.S.C. § 103(a) as being unpatentable over Nakamaru et al. (US 2002/0085660) in view of Chalfant, Jr. (US 4,465,201) is respectfully traversed.

Nakamaru et al. describe a boiling water reactor nuclear power plant that includes a pressure containment vessel 401 that has a dual-cylinder structure of an inner wall 401a and an outer wall 401b. The inner wall 401a forms a dry well 231 about the outer circumference of the pressure vessel 201. The outer wall 401b forms a suppression pool 404 on the outer side of the inner wall 401a. The walls are made by a plurality of steel plates and the spaces between the opposing plates being able to convey water or air. Nakamaru et al. do not describe nor suggest that the containment vessel has a pressure rating of at least about 50 atmospheres nor that the containment vessel has a volume less than four times the volume of the reactor pressure vessel.

Chalfant, Jr. describes a shipping container apparatus for radioactive and other hazardous materials that includes a body opened at the top, a conical O-ring seal and a closure member for sealing the container. Chalfant, Jr. does not describe nor suggest a nuclear reactor containment vessel that includes a drywell located inside the containment cavity and a remotely actuated valve in flow communication with the drywell, where the valve is configured to connect to the

reactor pressure vessel nor a containment vessel having a volume less than four times the volume of a reactor pressure vessel.

Nakamaru et al. and Chalfant, Jr. do not describe nor suggest a containment vessel as recited in Claim 1 nor a nuclear reactor as recited in Claim 11. Particularly, Nakamaru et al. do not describe nor suggest that the containment vessel has a pressure rating of at least about 50 atmospheres (which the Office Action admits), nor that the containment vessel has a volume less than four times the volume of the reactor pressure vessel. Rather, Nakamaru et al. describes a dual-wall containment vessel 401, that is illustrated in Figures 2 and 10, which houses the drywell and the suppression pool (see paragraphs 0050 and 0112). The volume of containment vessel 401 shown in these figures appears to be larger than four times the volume of the reactor pressure vessel 201. Also, Chalfant, Jr. does not describe nor suggest a nuclear reactor containment vessel that has a volume less than four times the volume of a reactor pressure vessel that is located inside the containment vessel.

Further, Applicant submits that it would not be obvious to modify Nakamaru et al. with the teachings of Chalfant, Jr. because there is no motivation to do so other than the motivation supplied by Applicant's disclosure. Particularly, there is no indication that the containment vessel of Nakamaru et al. requires the pressure rating of 1000 psig of the shipping container of Chalfant, Jr. As explained in the present application, known containment vessels are typically of sufficient volume to depressurize any steam release from the reactor pressure vessel so that the pressure rating of the containment vessel is about 3 atmospheres. Applicant submits that Nakamaru et al. teaches that the containment vessel includes a wetwell with a suppression pool, which Applicant submits appears to be much larger than four times the volume of the pressure

vessel (see Figs. 2 and 10) Applicant submits that one skilled in the art would understand that there is a large enough volume in the containment vessel to depressurize any steam release well below the 1000 psig pressure rating taught by Chalfant, Jr. Accordingly, Applicants submit that there is no motivation to modify the containment vessel of Nakamaru et al. with the pressure rating of Chalfant, Jr. because there is no need to do so. It appears that the only motivation to modify the teachings of Nakamaru et al. with the teachings of Chalfant, Jr. impermissibly comes from Applicant's application. Therefore, it would not have been obvious to one skilled in the art to modify the teachings of Nakamaru et al. with the teachings of Chalfant, Jr.

For the reasons set forth above, Applicant submits that independent Claims 1 and 11 are patentable over Nakamaru et al. and Chalfant, Jr.

Claims 4 and 14 have been canceled.

Claims 2-3 and 6-9 depend from independent Claim 1 and Claims 12-13 and 15-20 depend from independent Claim 11. When the recitations of dependent Claims 2-3 and 6-9 Claims 12-13 and 15-20 are considered in combination with the recitations of Claims 1 and 11 respectively, Applicant respectfully submits that Claims 2-3, 6-9, and 12-13 and 15-20 likewise are patentable over Nakamaru et al. and Chalfant, Jr.

For the reasons set forth above, Applicants respectfully request that the Section 103(a) rejection of Claims 1-4, 6-9, and 11-20 be withdrawn.

The rejection of Claims 10 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Nakamaru et al. (US 2002/0085660) in view of Chalfant, Jr. (US 4,465,201) and further in view of Kobayashi (US 4,576,784) is respectfully traversed.

At least for the reasons explained above, independent Claims 1 and 11 are patentable over Nakamaru et al. and Chalfant, Jr.

Kobayashi describes a nuclear reactor pressure vessel that has a thickness of about 30 cm. Kobayashi does not describe nor suggest a containment vessel that encloses the reactor pressure vessel inside. Kobayashi does not describe nor suggest a containment vessel having a pressure rating of at least about 50 atmospheres, nor a nuclear reactor containment vessel that has a volume less than four times the volume of a reactor pressure vessel that is located inside the containment vessel. Particularly, Kobayashi does not describe nor suggest any containment vessel.

Further, Nakamaru et al., Chalfant, Jr., and Kobayashi do not describe nor suggest a containment vessel as recited in Claim 1 nor a nuclear reactor as recited in Claim 11. Particularly, Nakamaru et al., Chalfant, Jr., and Kobayashi do not describe nor suggest a containment vessel that has a pressure rating of at least about 50 atmospheres, nor a containment vessel that has a volume less than four times the volume of the reactor pressure vessel. Accordingly, Applicant submits that independent Claims 1 and 11 are patentable over Nakamaru et al., Chalfant, Jr. and Kobayashi.

Claim 10 depends from independent Claim 1 and Claim 21 depends from independent Claim 11. When the recitations of dependent Claims 10 and 21 are considered in combination with the recitations of Claims 1 and 11 respectively, Applicant respectfully submits that Claims 10 and 21 likewise are patentable over Nakamaru et al., Chalfant, Jr., and Kobayashi.

For the reasons set forth above, Applicant respectfully requests that the Section 103(a) rejection of Claims 10 and 21 be withdrawn.

The rejection of Claims 10 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Nakamaru et al. (US 2002/0085660) in view of Chalfant, Jr. (US 4,465,201) is respectfully traversed.

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The rejection of Claims 1-4, 6-9, and 11-20 under 35 U.S.C. § 103(a) as being unpatentable over Nakamaru et al. (US 2002/0085660) in view of Kessler et al. (Proceedings of the Fifth International Conference on Emerging Nuclear Energy Systems, Karsruhe, 3-6 July 1989) is respectfully traversed.

As explained above, Nakamaru et al. do not describe nor suggest a containment vessel as recited in Claim 1 nor a nuclear reactor as recited in Claim 11. Particularly, Nakamaru et al. do not describe nor suggest a containment vessel that has a pressure rating of at least about 50 atmospheres nor a containment vessel that has a volume less than four times the volume of the reactor pressure vessel.

Kessler et al. describe that during a hydrogen detonation in a reactor containment the overpressure spike would be about 23 MPa for a duration of 5 milliseconds. Kessler et al.

describe a containment that includes a 2 meter thick prestressed concrete containment having a 40 mm thick steel liner that can withstand an inner static pressure of about 3 MPa (29.6 atmospheres) and a pulse pressure of 23 MPa (227 atmosphere) for a duration of 5 milliseconds. Kessler et al. do not describe nor suggest a metal containment vessel having a pressure rating of about 50 atmospheres and which has a volume less than 4 times the volume of the reactor pressure vessel that is located inside the containment vessel. Rather, Kessler et al. describe a prestressed concrete containment vessel having a metal liner that has a pressure rating of about 30 atmospheres. Also, as illustrated in Figures 2-4, Kessler et al. do not describe nor suggest a metal containment vessel that has a volume less than 4 times the volume of the reactor pressure vessel that is located inside the containment vessel.

Nakamaru et al. and Kessler et al. do not describe nor suggest a containment vessel as recited in Claim 1 nor a nuclear reactor as recited in Claim 11. Particularly, Nakamaru et al. do not describe nor suggest that the containment vessel has a pressure rating of at least about 50 atmospheres (which the Office Action admits), nor that the containment vessel has a volume less than four times the volume of the reactor pressure vessel. Rather, Nakamaru et al. describes a dual-wall containment vessel 401, that is illustrated in Figures 2 and 10, which houses the drywell and the suppression pool (see paragraphs 0050 and 0112). The volume of containment vessel 401 shown in these figures appears to be larger than four times the volume of the reactor pressure vessel 201. Also, Kessler et al. do not describe nor suggest a nuclear reactor containment vessel that has a pressure rating of at least about 50 atmospheres, nor a containment vessel that has a volume less than four times the volume of a reactor pressure vessel that is located inside the containment vessel. Rather, Kessler et al. describe a concrete containment

vessel that has a pressure rating of about 30 atmospheres and is larger than four times the volume of the reactor pressure vessel (see Figures 2-4). For the reasons set forth above, Applicant submits that Claims 1 and 11 are patentable over Nakamaru et al. and Kessler et al.

Claims 4 and 14 have been canceled.

Claims 2-3 and 6-9 depend from independent Claim 1 and Claims 12-13 and 15-20 depend from independent Claim 11. When the recitations of dependent Claims 2-3 and 6-9 Claims 12-13 and 15-20 are considered in combination with the recitations of Claims 1 and 11 respectively, Applicant respectfully submits that Claims 2-3, 6-9, and 12-13 and 15-20 likewise are patentable over Nakamaru et al. and Kessler et al.

For the reasons set forth above, Applicants respectfully request that the Section 103(a) rejection of Claims 1-4, 6-9, and 11-20 be withdrawn.

The rejection of Claims 10 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Nakamaru et al. (US 2002/0085660) in view of Kessler et al. (Proceedings of the Fifth International Conference on Emerging Nuclear Energy Systems, Karsruhe, 3-6 July 1989) and further in view of Kobayashi (US 4,576,784) is respectfully traversed.

At least for the reasons explained above, independent Claims 1 and 11 are patentable over Nakamaru et al. and Kessler et al.

Kobayashi describes a nuclear reactor pressure vessel that has a thickness of about 30 cm. Kobayashi does not describe nor suggest a containment vessel that encloses the reactor pressure vessel inside. Kobayashi does not describe nor suggest a containment vessel having a pressure rating of at least about 50 atmospheres, nor a nuclear reactor containment vessel that has a volume less than four times the volume of a reactor pressure vessel that is located inside the

containment vessel. Particularly, Kobayashi does not describe nor suggest any containment vessel.

Further, Nakamaru et al., Kessler et al., and Kobayashi do not describe nor suggest a containment vessel as recited in Claim 1 nor a nuclear reactor as recited in Claim 11.

Particularly, for the reasons explained above, Nakamaru et al., Kessler et al., and Kobayashi do not describe nor suggest a containment vessel that has a pressure rating of at least about 50 atmospheres, nor a containment vessel that has a volume less than four times the volume of the reactor pressure vessel. Accordingly, Applicant submits that independent Claims 1 and 11 are patentable over Nakamaru et al., Kessler et al., and Kobayashi.

Claim 10 depends from independent Claim 1 and Claim 21 depends from independent Claim 11. When the recitations of dependent Claims 10 and 21 are considered in combination with the recitations of Claims 1 and 11 respectively, Applicant respectfully submits that Claims 10 and 21 likewise are patentable over Nakamaru et al., Kessler et al., and Kobayashi.

For the reasons set forth above, Applicant respectfully requests that the Section 103(a) rejection of Claims 10 and 21 be withdrawn.

The rejection of Claims 10 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Nakamaru et al. (US 2002/0085660) in view of Kessler et al. (Proceedings of the Fifth International Conference on Emerging Nuclear Energy Systems, Karsruhe, 3-6 July 1989) is respectfully traversed.

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For the reasons set forth above, Applicant respectfully requests that the Section 103(a) rejection of Claims 10 and 21 be withdrawn.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Favorable action is respectfully solicited.

Respectfully submitted,



Michael Tersillo
Registration No. 42,180
ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600
St. Louis, Missouri 63102-2740
(314) 621-5070